charged gas, at least two of the equilibrium positions being different from each other.

**62**. A method of collecting ions, comprising:

(a) applying an electric field to a volume containing a neutrally charged carrier gas and ions; and

(b) converging the ions toward convergent points corresponding to the ion type, as a function of the electric field applied to the volume and mobility characteristics of the ions, the mobility characteristics of the ions resulting from multiple collisions of the ions with molecules of the neutrally charged carrier gas.

**63**. The method of claim **62**, wherein step (a) includes varying the electric field strength of the electric field applied to the volume and step (b) includes converging the ions as a function of a difference of mobility experienced by each ion due to a difference in electric field strength of the electric field applied to the volume in step (a).

**64**. The method of claim **62**, wherein step (b) includes converging the ions to convergent points located within the volume.

**65**. The method of claim **62**, further comprising:

analyzing the ions in a spectrometer; and

wherein step (b) includes converging the ions towards an ion sampling entrance of the spectrometer.

**66**. The method of claim **65**, wherein the spectrometer is a mass spectrometer and the ion sampling entrance is a pinhole aperture of the mass spectrometer.

**67**. The method of claim **65**, wherein the spectrometer is an ion mobility spectrometer.

**68**. The method of claim **67**, wherein the ion mobility spectrometer is a drift tube.

**69**. A method of separating and converging ions within a trap, the trap including at least two electrodes positioned about a trap volume containing a carrier gas, comprising:

(a) applying a voltage across the at least two electrodes creating an electric field within the trap volume, and

(b) separating and converging the ions according to a difference in mobility experienced by each ion as a function of a change in the electric field, the mobility of the ions resulting from multiple collisions of the ions with molecules of the carrier gas.

**70**. The method of claim **69**, wherein step (b) includes collecting the ions to temporary equilibrium positions within the trap.

**71**. The method of claim **69**, wherein step (b) includes converging the ions to an entrance of a mass spectrometer, and the method further comprises (c) detecting the ions with the mass spectrometer.

**72**. The method of claim **69**, wherein step (b) includes converging the ions towards an axis within the trap volume.

**73**. The method of claim **72**, wherein step (b) includes collecting the ions along the axis within the trap volume.

**74**. The method of claim **73**, wherein step (b) includes collecting the ions at corresponding equilibrium positions along the axis within the trap volume.

**75**. The method of claim **74**, wherein the axis is the axis of symmetry of the trap volume.

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